



Ø BEAT



COLORADO SPRINGS,
COLORADO

JUNE 1986

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PIKES PEAK RADIO AMATEUR ASSOCIATION, INC
P.O. Box 16521
COLORADO SPRINGS, CO 80935

FIRST CLASS MAIL



Ø BEAT



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The Pikes Peak Radio Amateur Association meets on the second Wednesday of each month at Giuseppe's Depot Restaurant at 105 Sierra Madre at 7:30 p.m. All amateurs and interested parties are invited to attend.

Editor: Phil Somers VE1ARC, 1075 Allegheny Dr. Colorado Springs, CO 80919 590-7136

EDITORIAL NOTES

Without a doubt, the big news this past month has been the SwapFest. It was a very busy place at the Rustic Hills Mall. I think a lot of people were surprised at the enormity of the affair. Obviously, a tremendous amount of work had been done by Jim, WA9ABB and Ron, NKØP and others who helped in many ways. The big key was participation, and there was lots of that. There were, of course, lots of "boat anchors" but it seemed that there were lots of good bargains too, and a great selection of new equipment. The bottom line was the public exposure for the Club and for amateur radio, and of course, the \$1000.00 profit. Well done to all the participants!

The Teller County Hill Climb was the other major club activity. See the details on page 10. Can you guess who had his 66th birthday on the mountain? For those who have not participated in communications for a hill climb, be assured it is lots of fun. Volunteers are still needed for the Pikes Peak Hill Climb on 12 July. It should be even more exciting. See Malcolm KE9B (488-2071) for more details. Volunteers must attend a safety course. See the minutes on page 11 for those details.

Thanks to the excellent support of the membership, this issue of Ø-Beat is 100% made in the Pikes Peak region. There was no room for Gateway, QEX, or other external articles. There wasn't even room for all the local articles. Please be patient if your article has to wait for the next issue. Keep up the good work!

"LOCAL QRM"

SwapFest




NKØP

WA9ABB

\$1000.

JUNE MEETING

The next regularly scheduled meeting of the Pikes Peak Radio Amateur Association will be held on Wednesday, June 11 at 7:30 PM at Giuseppe's Depot at #10 S. Sierra St. The tentative program will feature planning for Field Day and a presentation on VHF contesting by Ron, NKØP.

"VIEW FROM THE PEAK"

by George Hinds, N8CIX/Ø

"TORNADOES, FLOODS, AND SUCH"

Perhaps you were there. Where? At the weather spotter training session on Sunday, April 20th, in the Colorado Springs police station. If you were, you know how interesting it was; if you were somewhere else, you missed out on a most interesting and informative program.

There was a movie (of the Wichita Falls tornado of April 10, 1979) that was very graphic - and it also directly identified the important part that Amateur Radio played in how the storm spotting was performed.

In that day of storms, at least 15 tornadoes ripped through Texas and Oklahoma, killing 58 and injuring more than 1,800.

Slides were also displayed to show the buildup and progress of tornadoes, and a question and answer session was a part of the program.

There were about 100 present, of whom about half were amateur radio operators. Several wives accompanied their husbands, too; that's likely to be valuable since they may be with their OM during storm season and now are better informed of the weather, thunderstorms, and developing tornadoes. This could lead to teamwork.

Bud WBØTIB conducted the program. Considerable attention was given to stream and creek flooding that so often occurs in this area. Slides were shown illustrating the location of the staff gauges on local watercourses; this will enable spotters to find specific gauges in the event of flooding, or the potential for such, if they are dispatched for that purpose.

An important reminder: confine reports to significant weather developments: heavy hail, tornado, waterspout, funnel cloud, destructive wind, or thunderstorm with frequent lightening. Then give specific location, time of observation, and what it was doing. Don't load the frequency with over-ID'ing or mere trivia. Keep it professional...

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SWAPFEST - CAMPOUT Mountain Amateur Radio Club

Saturday - Sunday July 26-27
Red Rocks Campground - 3 miles North
Woodland Park, Colorado

- Pot Luck Dinner Saturday Night
- Bring own meat plus pot luck dish
- Bring own table or tailgate
- You may arrive Friday evening to camp
- \$5.00 per nite per space to camp/sell
- No double charges
- Snack bar available
- Over \$1000. in door prizes
- 1st prize - Icom 735
- 2nd prize - Icom 04AT
- 3rd prize - MFJ Keyer + Bencher Paddle

- Talk-in 144.56/145.16, 146.52, 37/97
- Reservations: Joe-N0CMD 687-3641
Jack-W0JAW 687-2146
or Box 151, Woodland Park, CO 80866

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*****
$
$   PRIZE FOR BEST ARTICLE ! ! !
$
$   There will be a special prize for the
$   member who submits the best article
$   that gets published in the May or
$   June issue of O-Beat. Judging will be
$   by all the members present at the
$   June meeting.
$
$   ANOTHER PRIZE ! ! ! ! ! ! ! !
$
$   There will be a special prize for the
$   member who submits the best article
$   that gets published in the
$   ----July----August----September----
$   issues of O-Beat. Judging will be by
$   all the members present at the
$   September meeting.
$
*****
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VHF AND ABOVE NEWS
by Ron Deutsch NKOP

SWAPFEST VOLUNTEER EXAMINATIONS

Congratulations to those who recently upgraded during the Volunteer Examination session held on May 17, 1986. The following either upgraded to a higher license or got a new license:

Franklin D Smith	Unlicensed to Novice
Arthur H Tichenor	General to Advanced
Dwight D Wood	Novice to General
Randolph Lingerberger	Technician to General
Frank Kaltenstein	Unlicensed to Novice
Roy F Burnett	Novice to Technician
Elsie L Swain	Novice to Technician
Gerald J Farkasofsky	General to Advanced
Thomas Moliere	Unlicensed to Extra
Benjamin R Cooper	Unlicensed to Tech
Christopher C Smith	Advanced to Extra
Neal L Cline	Novice to Technician
Chat H Koons	Novice to Technician
Roxy V VanHoudan	Novice to Technician
Glenn E Sisson	Novice to Technician
Michael B Watkins	Novice to Technician
Ronald L Svoboda	Novice to Technician
Edward J Villacres	Novice to Technician

The following is a composite of all VE tests, and their percentages, given during the past year (1985-1986).

Elements 8 (given), P (passed),
Total, applied, upgraded

	1A	1B	1C	2	3	4A	1B	Tot	App	Upd
G	13	18	13	12	32	17	10	115	65	49
P	10	5	8	11	27	11	8	80		
XP	81	28	62	92	84	65	80	70		

% Upgraded 75

Upgraded by class

Novice	Technician	General	Advanced	Extra
4	23	5	9	8

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NEWS FROM DAYTON! If there is a Ham Radio Heaven it must be in Dayton. With over 2000 swap tables and over 100 new equipment dealers you could certainly be tempted to pick up a 'few' to many goodies. A few new VHF/UHF radios were introduced but NOT available yet. ICOM's IC7000 25-2000MHZ all mode receiver seems impressive but design problems delayed its delivery until June 8th. Kenwood has a new mobile all mode rig the TR751A but if it was available I did not see one. SSB electronics of West Germany is working on a 10GHZ Transverter with a 144MHZ IF. This unit has been prototyped but is not in production at present. Advanced Receiver Research showed their line of 10 and 24 GHZ Gunplexers but unfortunately still priced out of the reach of most amateurs.

The June VHF Contest is fast approaching (Begins 1800 UTC June 14th and ends at 0300 UTC Monday June 16th) See May QST Pg 88 for details.

The Arietids meteor shower peaks on June 7th with approx. 60 meteors per hour. See June QST Pg 14 for excellent article on meteor scatter.

The results of the January VHF sweepstakes are out in this months QST. There was a lot more activity here in Colorado this year. I would like to thank all the people who gave me contacts and loaned me equipment. Special thanks to WA9ABB, NOCMW, and NROD who braved cow patties to go to 'rare' grid squares. We set a new Rocky Mountain Division record for total points.

Sporadic E has been on the increase this month with 6 meters open many days. Watch channel 2 for indications of band conditions as June should be the best month.

The Central States VHF conference is set for July 25-27 in St. Louis, MO. For info contact Bob Sluder NOIS, 5331 Cherryview La., St Louis, MO. 63128.

NOCMW is putting a VHF station on the air for field day at the club field day site. All help would be appreciated! 73's NKOP

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 * Jim Carroll 488-2094 *
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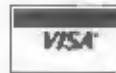
50 YEARS FOR OAK

In April 1936, Oak Stockton began his ham career at the age of 16. He was first licensed in Denver, with the call W9WUG. Oak remembers his first rig was a homebrew modulated oscillator with 5 watts on 5 meters. Believe it or not, he got some of his parts from Radio Shack, then a small mail order house in Boston. Allied was also a good source of parts, as well as the Denver outlets of Interstate Radio and Audio Equipment Co.

To get his license, Oak had to pass a 10 WPM send/receive code test and theory for a class B license. Bands available were 160, 80, 40, 20, 10, 5, and 2 1/2 meters AM and CW, with tone modulated CW on VHF. One of his receivers was a homebrew 53 double triode, with home-made capacitors and coils. He also had one of the first mobile rigs in the area, a modulated oscillator on 5 meters, powered by B batteries, with the filaments running off the battery of his Model A Ford.

Moving up to a commercial rig, Oak got a National 1-10 receiver, 1-to-10 meters with 10 plug-in coils and acorn tubes. Oak remembers being an active contester as early as 1938 in Colorado 5 meter Field Days. His first QSL cards were 1 cent postcards.

Being avid skiers, Oak and his friend Bill, W9WYU pioneered radio timing of ski races between 1936 and 1939. Rope tows were the only way to get to the top, with



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a heavy 5 meter back pack and lots of dry cell batteries. Longing for more adventure, Oak and Bill quit their jobs in Denver in 1939 and headed west, mobiling to the World's Fair in San Francisco. Money was scarce, and QSO's along the way were a means to many a meal enroute.

After World War II, Oak was ready with his hand on the key at 1 minute past midnight in December 1945 on the night that ham radio was restored after VJ Day. Oak then proceeded to get a variety of callsigns as he travelled on military duty. There were 18 in all, some of them twice, including JA, VK and KG. Two of his most memorable phone patches from overseas were two proxy marriages with the groom and the chaplain on one end and the bride and a minister on the other. Oak also recalls QSO's with Barry Goldwater and Arthur Bodfrey.

In 1986, Oak KOROL maintains a widely varied interest in ham radio. He is on packet, UHF, VHF, RTTY and ATV on 430 MHz. He has not been on HF for 15 years, and almost as long with no CW. Experimentation is his favorite pursuit, with knife-edge transmissions over Pikes Peak on 144, 220 and 430 MHz, and some mobile ATV.

Oak just received a nice certificate from the Quarter Century Wireless Association testifying to his 50 years as a avid ham. Congratulations Oak. Couldn't happen to a nicer guy!

A SIMPLE RF POWER METER

by Ken Wyatt, WA6TTY

This article describes a simple rf power meter you can build in one evening. It will measure power levels from about +4.0 dBm (2.5 mW) to the power limit of the terminating 50 ohm resistor. In my case, I used two 0.1 watt chip resistors, so the upper power limit was 200 mW (or +23 dBm). The schematic diagram is shown in Figure 1.

Two versions are described. The most accurate version uses an etched circuit board and chip components. See Figure 2. The upper frequency limit is at least 1.3 GHz. The connector is an SMA type soldered directly to the circuit board ground. Cut a short ribbon from copper stock to connect to the circuit trace. The 50 ohm resistor is constructed from two 100 ohm chip resistors. For more power capability, use four 200 ohm devices. Carefully bend the leads of the diode down and out so they will contact the traces when the device is flat to the board. When soldering the chip components, use a second person to hold the chip in position with a toothpick. This will prevent movement. Use as little solder as possible. The 1K resistor can be a standard 1/4 watt package and the last capacitor may be a chip or small disk ceramic. Bring out leads to pin or banana jacks for the digital volt meter. Wrap copper or brass shim stock around the top and bottom edges of the pc board in order to connect the top and bottom ground planes. The whole assembly may then be mounted inside a small metal box.

The easiest version is made with regular components, all of which are available from your nearest Radio Shack. See Figure 3. If all the leads are very short (or nonexistent) the upper frequency limit will be 200 Mhz or so. Make sure that the capacitor leads are zero length, or they won't act like capacitors at vhf and your accuracy will suffer. Although I have drawn the components self-supporting, you may mount everything inside a small metal box.

After construction, you will need to calibrate your meter. This may be done with a small dc power supply adjustable from 0 to 4 volts. By recording the voltages across the 50 ohm resistor and across the output, it is possible to calculate the rf power level. The following formulas are used.

$$\text{POWER (mW)} = \frac{500 * [V_r + (V_{out} - V_r)]^2}{R_{meas}}$$

where: V_r = measured voltage across the 50 ohm resistor.

V_{out} = measured output voltage.

R_{meas} = measured value of the "50" ohm resistor.

$$\text{POWER (dBm)} = 10 * \text{LOG (POWER in mW)}$$

For example, if the termination measures 48 ohms, the voltage across the termination is 3.0 volts, and the voltage across the output jacks is 3.2 volts, then the power in mW will be:

$$\begin{aligned} \text{POWER (mW)} &= \frac{500 * [3.0 + (3.2 - 3.0)]^2}{48} \\ &= 106.67 \text{ mW} \end{aligned}$$

The power in dBm would be:

$$\begin{aligned} \text{POWER (dBm)} &= 10 * \text{LOG (106.67)} \\ &= +20.28 \text{ dBm} \end{aligned}$$

Construct a "calibration curve" by setting the power supply to various levels from 0.5 to 4.0 volts in steps of 0.5 volts. Be careful not to exceed the power dissipation of the termination resistors. Next, measure the exact value

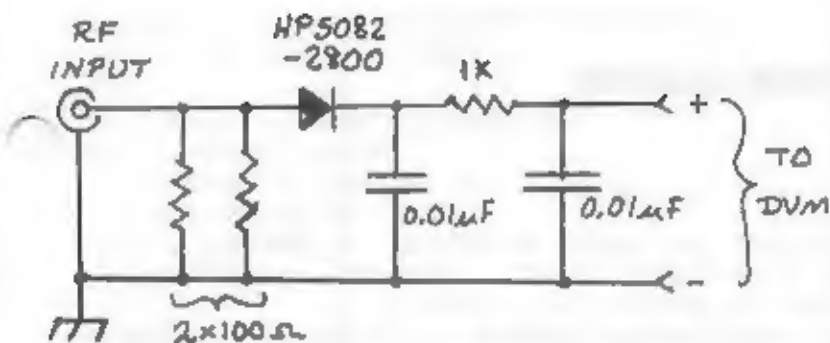


FIGURE 1 - RF POWER METER SCHEMATIC

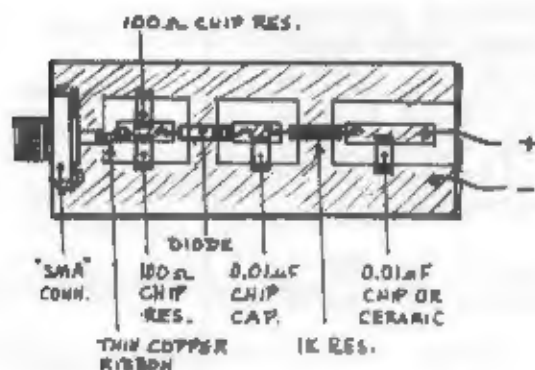


FIGURE 2 - MICROWAVE VERSION

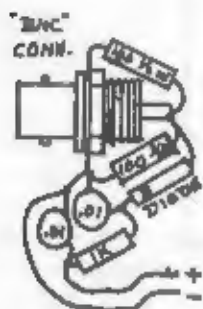


FIGURE 3 - HF/VHF VERSION

of the termination resistor. Plugging these values into the equations above will yield the equivalent power levels in mW and dBm. These numbers may then be plotted, as shown in Figure 4, to obtain a calibration curve of power vs output voltage for your particular component values. The values for my power meter are tabulated in Table 1.

This completes the project. Note that the lowest measurable power level is limited by the voltage drop across the diode. Thus, hot carrier (or Schottky) diodes are the most sensitive since their voltage drops are around 0.2 volts. It is possible to use germanium (0.4 volts) or silicon (0.7 volts), but they will only be accurate starting at +10 dBm or higher.

TABLE 1 - CALIBRATION CHART

Power Supply Voltage	Power (mW)	Power (dBm)
0.5	4.9	6.90
1.0	14.4	11.58
1.5	28.9	14.61
2.0	48.4	16.85
2.5	72.9	18.63
3.0	102.4	20.10
3.5	136.9	21.36
4.0	176.4	22.47

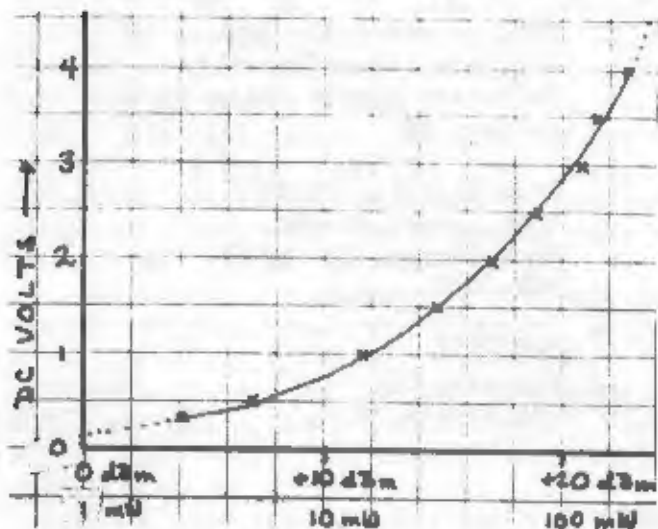


FIGURE 4 - CALIBRATION CURVE

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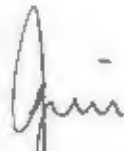
Two years ago we brought national pricing to Denver. We also introduced open pricing where all ham equipment is clearly marked with its nationally discounted price.

Your response has been tremendous! Because of this we are pleased to announce that we are expanding to larger and more convenient facilities to serve you better. We will be moving about June 10 to 525 E. 70th Street with easy freeway access and within a few yards of the intersection of 125, 176 and the Boulder Expressway.

Our new local phone number will be 288-7373. Please pardon any delays during our move and thanks for your support!

73's


KM0G NN0W


N0BLU


WD0GSE

P.S. You guessed it! Our new location will have ABSOLUTELY NO CITY SALES TAX!

COLORADO SWAPFESTS**Colorado Council of Amateur Radio Clubs**

July 25-27	Mountain ARC Campout Swap Woodland Park, CO 144.56/145.16	August 10	RMRL SwapFest and ARRL Colorado State Convention Jefferson County Fairgrounds Golden, CO
July 28	Ski Country SwapFest Glenwood Springs, CO (VE testing) Kevin Milner, KDOMA P.O. Box 302, Glenwood, CO 81602	Sept. ??	Fred Brachle, NOFIK 9185 Lander Street, Westminster, CO 80030 429-3865 BARCFEST Boulder, CO 146.10/146.70

Send additions or corrections to:

Bill Sheffield, KQ0J
CCARC Chairman
1444 Roslyn Street
Denver, CO 80220

Field Day this year is right around the corner - the fun starts Friday, June 27th with setting up camp and initial preparations for the big day. Bring your families along so everyone can join in the fun. This year we are planning games and a nature hike for the youngsters, volleyball for the older kids and young adults (and the rest of us who think we still are), and plenty of operating for all. Free Sunday morning breakfast will be served for those who sign up for it by 6 p.m. on Saturday evening - don't miss this traditional treat!

This year we will be operating class 2A with HF CW, HF phone, packet, VHF and novice stations. We are planning to have two HP computers for logging, and the solar station will again be used, as long as the weather cooperates, so there will be plenty of opportunities for everyone to operate. In case you are wondering about the operating class, the packet and novice stations are free, and the VHF station will operate under a separate call sign in the 1A category.

As usual, we still have a few loose ends that need to be tied down, so if you have any rigs, antennas, generators, hard-topped trailers, motor homes, etc. which you would be willing to share, please come to the next club meeting and find out what is still needed at that time. In any event, we can use a few more helping hands to ease the burden on the rest of us. If you can't be at the meeting, please contact one of the following and let us know how you can help:

Tom Weatherley	AD00	495-2788
Mike Stansberry	K0TER	636-1290

I want to make a few important points -

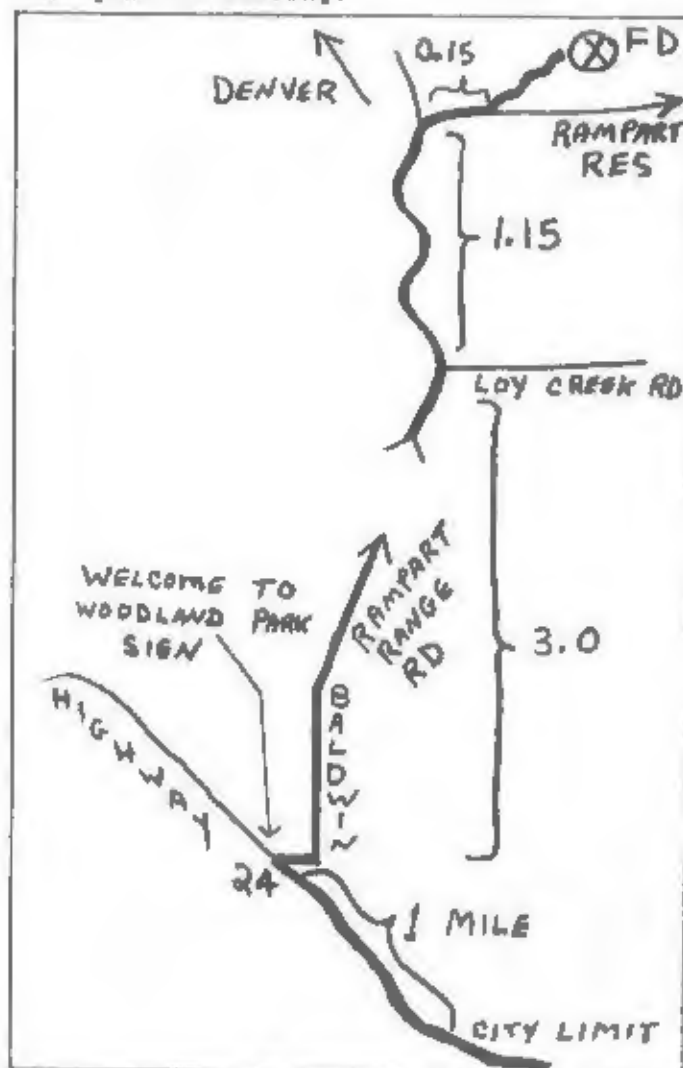
- Everyone is welcome - you don't have to be a club member, and if you have friends who have expressed an interest in ham radio, bring them too!
- Make a special effort to get novices to come - let us know who they (you) are!
- Bring the whole family
- The more the merrier

Finally, a special thanks to who have volunteered or are planning to help out - not only does it make my job easier, but it will assure that we will enjoy one of the best field days ever!

73,
Tom - AD00

Directions to Field Day

One mile past the M.P. city limit (inbound), you will see a large sign "Welcome to Woodland Park". Make a sharp right turn followed by an angled left on Baldwin. After two stop signs, the road angles to the right and becomes Rampart Range Rd. Three miles past the welcome sign, you are at the intersection of Loy Creek Rd (to the right) and the continuation of Rampart Range Rd. Bear left on RRR and go 1.15 miles to the next intersection. Then turn right, go 0.15 miles and angle off the road to the left on the first dirt trail - you are there. There will be intersection photos at the June general meeting.



TELLER COUNTY HILL CLIMB

There was lots of high speed racing and high speed communicating on the mountain in Teller County on Saturday and Sunday, May 31- June 1. Under the guidance of Doc, W0MCT, the Safety Net provided essential communications for six heats of about 30 cars each. If you have driven the gravel road from near Divide to Cripple Creek, you may not believe that some cars averaged 92 MPH, with a top speed of 130 MPH at the finish line. The net was a model of efficiency, with about 600 transmissions being required for each one hour heat. Thanks to the following volunteers for making it possible:

SATURDAY

Net Control	Doc	W0MCT
Start	Brian	KE0CD
Cliff Hanger	Malcolm	KE9S
Meadows	Don	N0GHE
Twelve	Phil	VE1ARC
Finish	Bill	K0QH

SUNDAY

Net Control	Doc	W0MCT
Start	John	N0FQH
Check Pt 2	Malcolm	KE9S
Check Pt 4	Paul	NE0H
Check Pt 7	Don	N0GHE
Check Pt 9	Smitty	WB0LTV
Check Pt 11	Phil	VE1ARC
Check Pt 12	Jerry	N0FZN
Check Pt 13	Don	WD0BSZ
Finish	Bill	K0QH

Thanks also for those who volunteered but were unable to make it this time. Hope to see all of you at Pikes Peak in July.



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TAB BOOKS

MINUTES OF MAY GENERAL MEETING

submitted by Al N0CMW, secretary

The general meeting of the Pikes Peak Radio Amateur Association was held on 14 May 1986 at Giuseppe's. The meeting was called to order by Les K0CNC at 1930 MDT. The introductions this month indicated the usual wide variety of amateur radio interests of both members and guests. There was an excellent turnout of 48 members and 12 guests. The minutes of the last meeting were approved as printed in O-Beat.

Committee Reports

Treasurer - Bud N0DDF: Balance as of 9 April 1986 was \$1814.64, income of \$291.50, and expenses of \$353.74, leaving a balance of \$1752.40.

RFI - Ron NKOP: Nil.

Field Day - Tom A000: 27-29 June. Al, N0CMW volunteered to co-ordinate the VHF station. The club will operate in Class 2A, with novice, CW and SSB operation using the call WA0YU. A volunteer motorhome would be welcome for a station set-up. Location: see map in O-Beat.

SWAPFEST - Ron NKOP and Jim WA9ABB: Everything looks real fine. Need volunteers to set-up tables Friday night, and to tear down Saturday evening.

Education - vacant: Still need a chairman for this committee.

Pikes Peak Hill Climb - Malcolm KE9SI: Volunteers are still needed for the Pikes Peak and Teller County Hill Climbs. Those volunteering for Pikes Peak will be required to attend a safety class at the Colorado Springs Fire Training Center at Bijou and Academy one evening on either 17, 19, 21, 23, 25 or 27 June.

Colorado Council of Amateur Radio Clubs (CCARC) - Bud NODDF: Next meeting in Jefferson County in August.

Public Service - Mike KOTER: Mike thanked all the volunteers for Walk for Mankind on Apr 12, and the March of Dimes on Apr 27.

Deaf and Blind School - Jim WA9ABB: Everything going well.

-Beat - Phil VE1ARD: Prize for the best article in May and June.

ARES - Jake NOCYR: Still need help on contacts for antenna installation on Penrose and Penrose Community.

Club Trailer - Pete NOLA: Volunteers helped. Trailer painting almost finished.

Announcements:

Tower Regs - Tom ADOD and Warren WOYME: Tom and Warren gave a status report on how tower regulations in the county are progressing.

50 Years as a Ham Oak, KOROL announced that he had just passed the 50 year milestone since he had been licenced and had a nice certificate to prove it.

Prizes - Don WBOHWS: Winners were:

KE0CQ	Don	2 mic connectors
000Z	Andy	Code practice record
KG5M	Nick	2 mic connectors
W2SR9	Bill	1 pair dead Nicads

WD6AMZ	Len	1 mic connector
WA0MNL	Rosie	\$10. Walker certificate
KD0EL	Max	FCC rule book (pass)
W0RTH	Bob	FCC rule book
KD4JM	John	\$10. Centennial certif.
NOCYR	Jake	20 feet coax
NKOP	Ron	Floppy disk

NOTE: Participation has been very good. Don was pleased to announce that the prize either next month or the month after would be an HT !

Guest Speaker. Ken WA6TTY gave an high quality presentation on switching power supplies. Not only was Ken extremely well qualified on the topic, but he had handouts, slides, and an informative, well paced delivery. Very nice job Ken.

MINUTES OF MAY BOARD MEETING submitted by Al NOCHW

The board meeting was held at 1900 on 19 May 1986 at the home of Jim WA9ABB. Those in attendance were Les KCONC, Al NOCHW, Bud NODDF, Jim WA9ABB, Don WBOHWS, Ken WA6TTY, and Ron NKOP. Ron reported on the SwapFest. The mall manager had no significant complaints. He was happy that the Club was the first mall group to clean up after their show. A return invitation is open. The SwapFest was a big success due to the enthusiastic support of Club members. The Board extended thanks and congratulations to Ron and Jim for all the hard work and a great job. The VE was very successful with 17 upgrades during the SwapFest. One person went from no licence to Extra. Bud gave the SwapFest financial report:

Income	\$2014.96
Expenses	\$1006.54
NET INCOME	\$1008.42

Ron volunteered for the Publicity Committee Chairman. The following monthly programs are planned:

July	Lightning	Brad KD0VM
August	Picnic	
September	Amplifiers	KX0D
November	AMSAT	
December	Christmas Party	
January	Home-brew	

The Board voted to have January as the regular Homebrew meeting in the future. The next board meeting will be at Giuseppe's.

MILEY'S RADIO

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Closed: June 6-9 Loveland, CO - July 11-14 Douglas, WY
July 25-28 Woodland Park - August 9-10 Colorado Convention - Denver

NEW EQUIPMENT IN STOCK

In Stock* New Kenwood TS 440S \$819 w/AT installed \$949
Kenwood TS 940S \$1595 w/auto tuner \$1750
Kenwood TS 430S w/free mike & FM board \$699 - 1 only
Kenwood TS 830S \$819
PS 430 Power Supply \$134 — PS 30 \$125
Kenwood AT 230 auto antenna tuner for 430S \$290
Kenwood AT 130 tuner \$125 AT 230 Tuner \$170
New Icom 735 \$735
Icom 745 \$819
Yaesu FT 757GX \$765
New "Amp Supply" LA 1000NT 160-15 meter 1200W PEP 400 DC
QSK, no tune up, drives with 100W-list \$529 - SALE \$475
Amp Supply LK5002B w/o QSK in stock w/10 meters \$950
Kenwood 4000A 2m & 440 FM Xcvr Sale \$519
Kenwood TR 3600 440 MHz HT \$325
Kenwood TR 2600A New HT \$290
New Kenwood TR 751A 2 meter all mode \$519
Kenwood TH21AT \$209 TH41AT \$219 — both with free extra battery
Kenwood FM 2570A 70 watt 2 meter FM mobile \$479
Kenwood FM 2550A 45 watt 2 meter FM mobile \$389
Kenwood FM 2530A 25 watt 2 meter FM mobile \$349
Sentec 20T w/2 number memory dialer-1 only \$285
Complete line of Tokyo High Power amps, preamps & tuners at lowest prices.
New Azden PCS 5000 \$285
Icom 2AT HT Reg. \$269 Now \$199
Icom 02AT \$299
Icom 4AT \$249
Icom 04AT \$349
Icom 27A \$348/Icom 27M \$329
Icom 47A \$398
Icom 3200 2 meter/440 dual bander \$499
Daiwa Meters, Switches & Rotors - In Stock
Mirage Amps - Low Prices - In Stock
New KDK FM 240 mini 25W w/TTM & LCD display, encoder/decoder \$320
w/o tone \$290
New Yaesu FT 209RH 5 watt FM HT \$299
Yaesu FT 2700RH 2 m-70 cm dual bander full duplex-free encoder \$519
Now a factory dealer for Ten Tec — In stock specials:
Corsair II HF xcvr. \$995
Argosy II HF xcvr. \$559
Century 22 HF CW xcvr. \$49
KR1B dual paddle memory keyer \$54
New generation Ten Tec 2591 2 m HT \$249 - 2 only - Demos
Astron PS — ALL AMPS — Low Prices - Astron R5 50 In Stock
Butternut HF6V 80-10 mtr. vertical \$115 160 mtr. adapter \$50
KLM 160V 160/80/40 vertical \$88
KLM 2M14C 2 mtr. circ. 14 ele. beam (oscar) \$88
KLM 43518C 420-450 18 circ. 18 ele. beam (oscar) 118
B&W AXS 160 shortened 160/30 mtr. dipole 95' long \$94
B&W AXS 80 shortened 80/40/15 mtr. dipole 64' long \$94
B&W AS 80 shortened 80/40/20 mtr. dipole 78' long \$94
Welz test meters in stock
New B & W V5 300 tuner-best 300W tuner for the price! Special \$79
Amp Supply LA 100A Special \$368
Amp Supply AT 1200 Tuner Special \$175
Now a distributor for Ameritron Amplifiers - A1 80A - 1 3-500Z - In Stock \$649
AEA CP-1 Computer Interface \$210
AEA PK 64 packet/cw/rtty etc. controller \$210 — HFM \$95
AEA PK 64 system w/HFM 64 installed \$310
Factory Dealer for Kantronics — In Stock!
New Kantronics Packet Program-includes program for UIC
Kantronics Packet Controller version 2 w/HFM \$195
Kantronics interface for VFC 20 and others \$125

Kantronics Universal Terminal Unit \$185
Kantronic Hamrest Hamsoft \$89
MFJ wet & dry dummy loads — in stock
MFJ Tuners and Keyers — in stock
MFJ 989 roller inductor tuner \$288
MFJ 982 1.5 KW tuner-160 to 10 meters \$219
New MFJ 1224 interface in stock w/free soft program \$90
MFJ 1229 interface w/free soft program \$160
In Stock! MFJ 1270 packet controller (TNC-2)
clone \$119

USED EQUIPMENT

Kenwood TR 2400 \$125
Kenwood TR 2500 \$195
Kenwood TR 3600 - like new \$275
Kenwood TS999/R599 twins w/xcvr cables \$350
Kenwood TS 520 \$350
Kenwood TS 520S \$350
Kenwood TS 530S \$450
Kenwood TS 530SP \$525
Kenwood TS 930S w/AT - Demo - 5 hrs. operation \$1050
Kenwood PS 30 power supply \$110
Icom PS 15 power supply \$95
Icom 740 \$745
Icom PS 20 p.s. \$150
JIC 740 & PS 20 combo for \$600
Tempo S15 w/new extra battery \$175
KDK 2031 25W 2 meter FM \$175
Yaesu FT 101E \$375
Yaesu FT 101EE \$350
Yaesu FT 101B \$325
Yaesu FT 101B ext. VFO \$75
Yaesu FT 2100B used, mnt. \$325
base/mobile \$75
Leader LAC 895 tuner 80-10 mtr. \$75
KLM 2-140 2 meter FM only amp, 2 in/140 out \$135
KLM PA 10-35/E 440 FM amp, 5-15 in/35 out \$65
AEA CP1/64 w/MBA TestPac \$150
Atlas 210X w/console power supply - Very Nice \$325
Drake T4XB, R4B, M5 4 ps/spkr \$250
Swan 350 - nice shape w/p.s., spkr. \$150
Sony ICF 2001 general coverage receiver \$150
Commodore 1525 Printer \$75
Radio Shack Color Computer II w/cassette \$180
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stock most of the better antenna companies products.
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6/86

NOTE:

Most Japanese manufacturers will be increasing prices
again 7-15% sometime in June.

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